Exercise - I (Conceptual Questions) Build Up Your Understanding

EPITHELIAL TISSUE

1. Epithelial tissue with thin flat cells appearing like packed tiles occurs on :-
(1) Inner lining of intestine
(2) Inner lining of stomach
(3) Inner lining of fallopian tubes
(4) Outer surface of Intestine

2. Germinal Epithelium of ovary is formed of:-
(1) Columnar Epithelium
(2) Squamous Epithelium
(3) Cuboidal Epithelium
(4) Stratified Epithelium

3. Epidermis of skin of vertebrates comprises:-
(1) Simple Epithelium
(2) Stratified Epithelium
(3) Transitional Epithelium
(4) Columnar Epithelium

4. Inner lining of Blood vessels and heart is tesselleted Epithelium. Which is :-
(1) Simple squamous due to wavy appearance
(2) Simple squamous due to tile like appearance
(3) Simple cuboidal due to wavy appearance
(4) Simple columnar Epithelium

5. Which of the following is incorrect about microvilli
(1) Minute process, non-motile, non-contractile
(2) Increase surface area for absorption & secretion
(3) Found in wall of intestine & stomach
(4) Found in wall of intestine & PCT of nephron

6. Finger like processes of plasma membrane which enter into cytoplasm of adjacent cell are called-
(1) Interdigitations (2) Synapse
(3) Cavity (4) Buds

7. Basement membrane can not be seen in :
(1) Stretched Transitional Epithelium
(2) Sq. Epithelium
(3) Columnar Epithelium
(4) Unstarched transitional epithelium

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8. Stretchable & Water proof Epithelium :-
(1) Simple cuboidal (2) Simple squamous
(3) Simple Columnar (4) Transitional

9. Mesothelium is :-
(1) Lining of coelom which originated from mesoderm
(2) Lining of coelom which originated from ectoderm
(3) Lining of heart which originated from Endoderm
(4) Lining of heart which originated from Mesoderm

10. Which of the following statement is incorrect about the simple squamous epithelial tissue?
(1) The squamous epithelium is made of a single thin layer of flattened cells with regular boundaries.
(2) Also called **Tesselated** epithelium due to its wavy appearance in blood vessel and coelom.
(3) All the cells of this epithelium rest upon basement membrane
(4) This epithelium is also called pavement epithelium

11. This epithelium is made up of a single thin layer of flattened cells and is involved in diffusion, it is found in :-
(1) Walls of blood vessels
(2) Ducts of glands
(3) Tubular parts of nephrons
(4) All of these

12. Exoskeleton (e.g. feathers, nail, horn, hoofs) originated from :-
(1) Connective tissue proper
(2) Epithelium tissue
(3) Skeletal tissue
(4) Vascular tissue

13. Germinative layer of Keratinized st. sq. Epithelium :-
(1) Cuboidal (2) Squamous
(3) Pseudo stratified (4) Transitional

14. Mucus cells (Goblet cells) :-
(1) Unicellular gland
(2) Multicellular glands
(3) Endocrine glands
(4) Parietal cells of gastric glands

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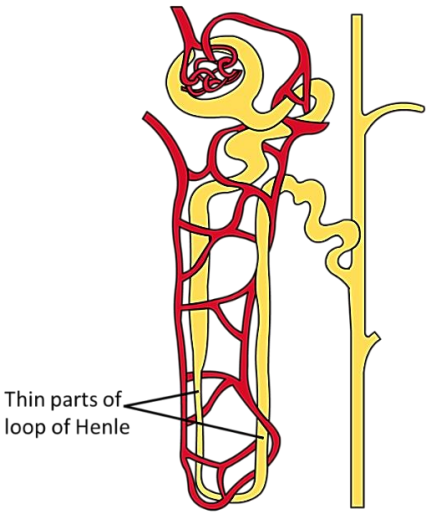
15. Which of the following option is correct about the labelled part of diagram given below?



(1) Lined by single layer of cells
(2) Epithelium in this part helps in forming a diffusion boundary
(3) Epithelium in this part is made up of single thin layer of flattened cells
(4) All of the above

16. Ependyma is :-
(1) Ciliated pseudostratified columnar
(2) Ciliated columnar
(3) Ciliated cuboidal epithelium
(4) Non Ciliated Columnar

17. Trachea consist of _____ epithelium :-
(1) Simple columnar (2) PSCCGE
(3) Simple cuboidal (4) Stratified cuboidal

18. Lining of blood vessel and air sacs of lungs are made up of :-
(1) Squamous Epithelium
(2) Columnar Epithelium
(3) Cuboidal Epithelium
(4) Pseudo stratified Epithelium

19. Lining of uterus (Endometrium) is :-
(1) St. squamous
(2) Simple squamous
(3) Simple columnar epithelium
(4) Ciliated Pseudostratified

20. In Transitional Epithelium :-
(1) Inner most layer is Cuboidal cell layer
(2) Inner most layer is Columnar cell layer
(3) Inner most layer is Pear shaped cell layer
(4) Inner most layer is umbrella shaped cell layer

21. Lining of sebaceous duct is composed of :-
(1) Cuboidal stratified Epithelium
(2) Stratified squamous
(3) Simple columnar
(4) Simple squamous

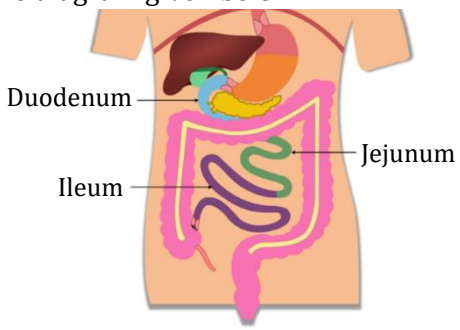
22. Match the following columns and choose the correct answer from the options given below?

Column A		Column B	
A	Coelom	**i**	Mesothelium
B	Blood vessels	**ii**	Endothelium
C	Lungs	**iii**	Endocardium
D	Heart	**iv**	Pleura

(1) A – i , B – ii , C – iii , D – iv
(2) A – i , B – iii , C – ii , D – iv
(3) A – i , B – ii , C – iv , D – iii
(4) A – iv , B – ii , C – iii , D – i

23. Brush border Epithelium (Microvilli containing) found in:-
(1) PCT (2) Loop of henle
(3) Collecting duct (4) Bowman's capsule

24. Which of the following option is correct about the diagram given below?



(1) These parts are lined by simple columnar ciliated epithelium
(2) These parts are lined by epithelium which helps in secretion and absorption
(3) These parts are lined epithelium in which only the cells of lowermost layer rest upon basement membrane
(4) Epithelium in these parts helps in forming the diffusion boundary

25. Characteristic of simple epithelium is :-
(1) They are arranged in discrminately
(2) They make a definite layer
(3) Continue to divide and help in organ function
(4) Never divide

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26. Who is founder of microscopic anatomy :-
(1) Bichat (2) Ruysch
(3) Malpighi (4) Hartwig

27. Tesselated epithelium is present in:-
(1) Ependymal membrane
(2) Endothelium
(3) Schneiderian membrane
(4) Alveoli of lungs

28. Basement membrane of epithelium tissue is composed of:-
(1) Lypoprotein
(2) Polypeptide
(3) Mucopolysaccharide
(4) Mucopolysaccharide and glycoprotein

29. The cavities of brain are lined by
(1) Cuboidal cells
(2) Polygonal cells
(3) Ependymal cells
(4) Simple squamous cells

30. Match the following columns and choose the correct answer from the options given below?

Column-A		Column-B	
A	Liver and bile duct	**i**	Simple columnar stereociliated epithelium
B	Gall bladder	**ii**	Simple columnar Brush border glandular epithelium
C	Small intestine	**iii**	Simple columnar glandular epithelium
D	Epididymis	**iv**	Simple columnar epithelium

(1) A – i , B – ii , C – iii , D – iv
(2) A – i , B – iii , C – ii , D – iv
(3) A – i , B – ii , C – iv , D – iii
(4) A – iv , B – iii , C – ii , D – i

31. Secretory part of sweat gland is composed of:-
(1) Cubodial epithelium
(2) Columner epithelium
(3) Pseudostratified epithelium
(4) Squamous epithelium

32. Glands of vertebrates are originated from :-
(1) Ectodermal
(2) Endodermal
(3) Mesodermal
(4) All the above

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33. Select the false statement with respect to epithelial tissue.
(1) It has a free surface
(2) It faces body fluids sometimes
(3) It faces the external environment sometimes
(4) It sometimes forms middle structure part of organs

34. Gall bladder lined by :-
(1) Simple columnar epithelium
(2) Stratified columnar epithelium
(3) Brush border columnar epithelium
(4) Brush border cuboidal epithelium

35. How many statements are correct about compound epithelium?
A — Ureter is lined by compound epithelium
B — Compound epithelium is a multi layered
C — All cells of this epithelium rest upon basement membrane
D — This epithelium has main role in diffusion and absorption
E — Buccal cavity is lined by transitional epithelium
(1) Two (A, B) (2) Three (A, B & C)
(3) Four (A, B, D & E) (4) Three (A, D & E)

36. Inner lining of stomach, rectum and colon is made of:-
(1) Simple squamous epi.
(2) Simple cuboidal epi.
(3) Simple columnar epi.
(4) Pseudostratified epi.

37. Wall of Bowman's capsule in nephron is made up of :-
(1) Cuboidal epithelium
(2) Columnar epithelium
(3) Squamous epithelium
(4) Glandular epithelium

38. Lining of salivary glands is made up of :-
(1) Stratified Squamous epithelium
(2) Stratified Cuboidal epithelium
(3) Stratified Columnar epithelium
(4) Transitional epithelium

39. Duct of mammary gland is composed of:-
(1) Stratified cuboidal epithelium
(2) Stratified columnar epithelium
(3) Stratified squamous epithelium
(4) Pseudostratified epithelium

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40. Which of the following is made up of cube like cells?
(1) Epithelium of fallopian tubes
(2) Epithelium of PCT
(3) Epithelium of stomach
(4) Epithelium of alveoli

41. Sweat glands of human being originate from:-
(1) Ectoderm (2) Mesoderm
(3) Endoderm (4) All the above

42. Mesothelium or peritoneum originate from:-
(1) Ectoderm
(2) Endoderm
(3) Ectomesoderm
(4) Mesoderm

43. Vesicles of thyroid gland is composed of:-
(1) Simple squamous epithelium
(2) Simple cuboidal epithelium
(3) Stratified squamous epithelium
(4) Stratified cuboidal epithelium

44. Which of the following statement is incorrect?
(1) A cell or a group of cells which secretes chemical substances are called glands.
(2) All glands are composed of connective tissue.
(3) Sweat glands are ectodermal in origin.
(4) On the basis of number of cells, glands are of two types unicellular and multicellular.

45. Compound squamous epithelium occurs in
(1) Stomach (2) Pharynx
(3) Intestine (4) Trachea

46. Epithelial tissue is
(1) Protective covering
(2) Reproductive structure
(3) Nerve cells
(4) Corpuscles.

47. Stratified and non-keratinised squamous epithelium occurs in
(1) Epidermis of skin
(2) Vagina and cervix
(3) Buccal cavity
(4) Both (2) and (3)

48. Basement membrane is formed of
(1) Epidermal cells
(2) Endodermal cells
(3) Both (1) and (2)
(4) None of the above but present below epithelial cells.

49. Regeneration after injury is absent in
(1) Nervous tissue (2) Skin epidermis
(3) Tendon (4) Smooth muscles

50. Brush border epithelium occurs in
(1) Trachea (2) Stomach
(3) Small intestine (4) Oesophagus

51. Adjacent epithelial cells are held together by means of
(1) Liposomes
(2) Glyoxisomes/glyoxysomes
(3) Desmosomes
(4) Microsomes.

52. Which of the following is not an endocrine gland ?
(1) Thyroid (2) Thymus
(3) Adrenal (4) Salivary

53. Simple epithelium is made of
(1) Noncellular layer of hyaluronic acid
(2) Actively dividing cells
(3) Loosely arranged cells
(4) Compactly packed single layer of cells.

54. Sebaceous glands are
(1) endocrine glands
(2) exocrine glands
(3) unicellular glands
(4) all of the above

55. Characteristic of epithelial tissues is
(1) Never produce glands
(2) Cells can undergo rapid divisions
(3) Abundant vascularisation
(4) Large intercellular spaces.

CONNECTIVE TISSUE

56. Volkmann's canal inter connect :-
(1) Bone marrow
(2) 3rd & 4th ventricle of Brain
(3) Central canals & 4th ventricle
(4) Haversian canals

57. Our heart consists of :-
(i) Epithelial tissue (ii) Connective tissue
(iii) Muscular tissue (iv) Nervous tissue
(1) Only ii (2) i & iii only
(3) ii, iii & iv only (4) All of these

58. Supportive connective tissue means :-
(1) Tendon (2) Cartilage & Bone
(3) Ligaments (4) Blood & Lymph

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59. Fibroblast secretes :-
(1) Matrix (2) Fibres
(3) Both (4) Cells

60. During injury mast cell secrete:-
(1) Elastin (2) Hirudin
(3) Heparin (4) Serotonin

61. Calcified cartilage found in :-
(1) Pubis of frog
(2) Diaphysis (shaft of long Bone)
(3) Articular surface of long Bone
(4) Sternum

62. Which of the following statement is incorrect about fibroblasts?
(1) Smallest cells of connective tissue proper
(2) Maximum in number
(3) Irregular in shape due to long cytoplasmic processes
(4) Cytoplasm is rich in rough ER

63. Outer most covering of heart is called _____ made up of _____ :-
(1) Perichondrium, dense regular connective tissue
(2) Perichondrium, dense irregular connective tissue
(3) Pericardium, areolar connective tissue
(4) Pericardium, dense irregular connective tissue

64. Which of the following is not an example of dense irregular yellow fibrous connective tissue?
(1) Epimysium
(2) Wall of alveoli of lungs
(3) Wall of small bronchioles
(4) True vocal cords

65. Epiphysis & Diaphysis of bone is :-
(1) End and shaft of long bone respectively
(2) Shaft & end of long bone respectively
(3) Head & neck of long bone
(4) Spongy bone only

66. Haversian canals are found in the :
(1) Bones of birds
(2) Bones of mammals
(3) Bones of frog
(4) Cartilage

67. Haversian canal contain :-
(1) Blood vessels and Nerves
(2) Blood vessels only
(3) Lymphocyte only
(4) Connective tissue only

TG: @Chalnaayaaar

68. All the following cells produces collagen except :-
(1) Osteoblast (2) Chondroblast
(3) Fibroblast (4) Mast cells

69. Alveoli has :-
(1) Yellow fibrous connective tissue
(2) White fibrous connective tissue
(3) Areolar connective tissue
(4) Adipose connective tissue

70. Renal capsule, tunica albuginea and duramater are made up of
(1) dense regular white fibrous connective tissue
(2) dense irregular white fibrous connective tissue
(3) dense irregular yellow fibrous connective tissue
(4) dense regular yellow fibrous connective tissue

71. Which of the following is not correct about areolar connective tissue?
(1) Also known as spongy connective tissue.
(2) It is most widely distributed tissue in the body.
(3) In this tissue minimum intercellular space and matrix is present.
(4) It serves as a support framework for epithelium.

72. Cart wheel cells are :-
(1) Adipocyte (2) Mast cell
(3) Plasma cell (4) Lymphocyte

73. Bones formed by ossification of a tendon is called
(1) Membrane bone (2) Sesamoid bone
(3) Dermal bone (4) Cartilage

74. Mast cell secret :-
(1) Anticoagulant : Heparin
(2) Vasodilator : Histamine
(3) Vaso constrictor : Serotonin
(4) All of the above

75. Matrix of cartilage produced by :-
(1) Chondrocytes (2) Chondroclasts
(3) Osteocytes (4) Histiocytes

76. Which of following is lack of blood supply :-
(1) Bone (2) Cartilage
(3) Connective tissue (4) All

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77. In Hyaline cartilage matrix is :-
(1) Granular (2) Transparent
(3) Agranular (4) Semi transparent

78. Sprain of body is due to pulling of :-
(1) Muscles (2) Ligaments
(3) Tendon (4) Nerves

79. Haversian canal occur in :-
(1) Humerus (2) Pubis
(3) Scapula (4) Clavicles

80. Protein present in cartilage & bone :-
(1) Chondrin & ossein respectively
(2) Chondrotin sulphate
(3) Cartilagein
(4) None

81. Which type of connective tissue present in the wall of bronchiole :-
(1) White fibrous C.T. (2) Areolar C. T.
(3) Yellow fibrous C. T. (4) Reticular C. T.

82. Macrophages of spleen are :-
(1) Microgleal cell
(2) Dust cell
(3) Reticulo endothelial cell
(4) Monocyte cell

83. Hypodermis of Human skin is composed of:-
(1) Mucoid C. T. (2) Adipose C. T.
(3) Areolar C. T. (4) Pigmented C. T.

84. Skeletal tissue originated from which embryonic germinal layer :-
(1) Ectoderm (2) Mesoderm
(3) Endoderm (4) All the above

85. Scavanger cell of connective tissue proper is called as-
(1) Fibroblast cell (2) Mast cell
(3) Plasma cell (4) Macrophages

86. Septa which connect skin with underlaying muscle are made up of :-
(1) Epithelium tissue
(2) Yellow fibrous C. T.
(3) Adipose C. T.
(4) Areolar C. T.

87. Which protein is present in largest amount in human body :-
(1) Collagen (2) Elastin
(3) Albumin (4) Keratin

88. Endosteum is composed of :-
(1) White fibrous C. T.
(2) Reticular C. T.
(3) Yellow fibrous C. T.
(4) Areolar C. T.

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89. Matrix of connective tissue proper is secreted by-
(1) Mast cell (2) Fibroblast cell
(3) Fibrocyte cell (4) All the above

90. Yellow fibers are present in :-
(1) Arrange in bundles
(2) Singly and branched
(3) Singly and unbranched
(4) Unbranched & arrange in bundles

91. Arzyrophill fibers are present in :-
(1) In spleen (2) In tendons
(3) In ligament (4) In blood vessel

92. Outer most covering of cartilage is called _____ which is composed of _____ fibrous connective tissue :-
(1) perichondrium, yellow
(2) periostium, white
(3) perichondrium, white
(4) periostium, yellow

93. The covering of articular cartilage is made up of:-
(1) Areolar C.T.
(2) Yellow fibrous C.T.
(3) White fibrous C.T.
(4) Reticular C.T.

94. What is common between epiglottis, tip of nose and alveoli of lungs?
(1) Contain white fibrous cartilage
(2) Contain hyaline cartilage
(3) Contain yellow fibrous cartilage
(4) Contain calcified cartilage

95. Which of the following are specialised connective tissue :-
(1) Cartilage (2) Bone
(3) Blood (4) All

96. Cytoplasmic process of osteocytes are present in
(1) Central canal (2) Volkman canal
(3) Haversion canal (4) Canaliculi

97. Chondrin is composed of :–
(1) Chondrotin– 6–sulphate and ossein
(2) Dextrin
(3) Chondrotin–6–sulphate and hyaluronic acid
(4) Chondrotin– 6–sulphate and condrocyte)

98. Histiocyte of brain is :–
(1) Reticular cell (2) Microglial cell
(3) Hessel's corpuscle (4) Monocyte

99. Most of the cells present in areolar connective tissue are :–
(1) Mast cell (2) Plasma cell
(3) Fibroblast (4) Macrophages

100. Cartilage is present in :-
(1) Between adjacent bones of vertebral column and limb
(2) In middle of the long bone
(3) Both (1) and (2)
(4) None

101. Spleen and lymph nodes are made up of :–
(1) Areolar C.T.
(2) White fibrous C.T.
(3) Reticular fibrous C.T.
(4) Mucoid C.T.

102. Which structure composed of yellow fibrous cartilage :–
(1) Thyroid (2) Cricoid
(3) Epiglottis (4) Tracheal rings

103. Heparin is :–
(1) Protein
(2) Fat
(3) Carbohydrate
(4) Mucopolysacchride

104. Transverse channels present in long bones of mammals :–
(1) Canaliculi
(2) Haversian's canal
(3) Volkmann's canal
(4) Vascular canal

105. Which cartilage present on the end of long bone:-
(1) Hyaline cartilage
(2) Fibrous cartilage
(3) Calcified cartilage
(4) Elastic cartilage

106. Which of the following have hard and non pliable ground substance :-
(1) Cartilages (2) Bones
(3) Both (4) Areolar tissues

107. Histamin is secreted by :-
(1) Fibroblasts (2) Plasma cell
(3) Mast cells (4) Lymphocytes

108. Mammalian pinna is supported by
(1) Hyaline cartilage
(2) Calcified cartilage
(3) Elastic cartilage
(4) White fibrous connective tissue

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109. Fibres present in the form of bundles are
(1) Elastic
(2) Reticular
(3) Elastic and reticular
(4) Collagen

110. Which one is unrelated ?
(1) Keratin (2) Elastin
(3) Dextrin (4) Collagen

111. Protein present in cartilage is
(1) Cartilagin (2) Chondrin
(3) Ossein (4) Casein

112. Ends of two long bones are 'connected' by
(1) Cartilage (2) Muscles
(3) Ligaments (4) Tendons

113. Regeneration of cartilage can occur from its
(1) Matrix
(2) Plasma
(3) Perichondrium
(4) A piece without perichondrium

114. Mast cells occur in
(1) Connective tissue (2) Epithelial tissue
(3) Skeletal tissue (4) Nervous tissue

115. White fibrous tissue is
(1) Nervous (2) Muscular
(3) Ligaments (4) Tendons.

116. Loose conective tissue is
(1) Areolar (2) Bone
(3) Blood (4) Cartilage.

117. Ligament is
(1) Modified white fibrous tissue
(2) Solid white fibrous tissue
(3) Modified elastic connective tissue
(4) Cartilage

118. Cartilage present in trachea, larynx and bronchi is
(1) Fibrous (2) Elastic
(3) Hyaline (4) Calcified.

119. Cartilage is
(1) Nonvascular
(2) Harder than bone
(3) Highly vascular
(4) Covered by periosteum

120. An anticoagulant is
(1) Heparin (2) Hirudin
(3) EDTA (4) All the above

121. Collagen and elastin are formed by
(1) Macrophages (2) Fibroblasts
(3) Mast cells (4) Chondrocytes

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122. Which is not a component of areolar tissue
(1) Macrophage (2) Plasma cell
(3) Schwann cell (4) Adipose cell

123. Which of the following is not true?
(1) Limb bones are long bones.
(2) The function of long bones is weight bearing and bringing out movement.
(3) Bone marrows in all such long bones are site of blood cells production.
(4) All of these

124. Nasal septum gets damaged. Its recovery requires cartilage called :
(1) Fibrous cartilage
(2) Elastic cartilage
(3) Hyaline cartilage
(4) Calcified cartilage

125. What will happen if ligaments are cut or broken:-
(1) Bones will move freely at joints
(2) No movement at joint
(3) Bone will become unfix
(4) Bone will become fixed

126. Which one of the following contains the largest quantity of extracellular material :-
(1) Striated muscle
(2) Areolar tissue
(3) Stratified epithelium
(4) Myelinated nerve fibres

EXERCISE-I (Conceptual Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	4	3	2	1	3	1	1	4	1	1	1	2	1	1	4
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	2	2	1	3	1	1	3	1	2	2	3	2	4	3	4
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	1	4	4	3	1	3	3	2	1	2	1	4	2	2	2
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	1	4	4	1	3	3	4	4	2	2	4	4	2	3	4
Question	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Answer	1	1	4	1	1	2	1	4	1	2	3	3	2	4	1
Question	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90
Answer	2	4	2	1	1	3	3	3	2	4	4	1	2	4	2
Question	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105
Answer	1	3	3	3	4	4	3	2	3	1	3	3	4	3	1
Question	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
Answer	2	3	3	4	3	2	3	3	1	4	1	3	3	1	4
Question	121	122	123	124	125	126									
Answer	2	3	3	3	3	2									

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Exercise - II (Previous Year Questions) AIPMT/NEET

AIPMT 2006

1. Areolar connective tissue joins –
(1) Fat body with muscles
(2) Integument with muscles
(3) Bones with muscles
(4) Bones with bones

2. Mast cells secrete –
(1) Hippurin (2) Myoglobin
(3) Histamine (4) Hemoglobin

AIPMT 2007

3. In which one of the following preparations are you likely to come across cell junctions most frequently?
(1) Hyaline cartilage
(2) Ciliated epithelium
(3) Thrombocytes
(4) Tendon

AIPMT 2009

4. The cell junctions called tight, adhering and gap junctions are found in :-
(1) Neural tissue
(2) Muscular tissue
(3) Connective tissue
(4) Epithelial tissue

5. The kind of tissue that forms the supportive structure in our pinna (external ears) is also found in :-
(1) Tip of the nose (2) Vertebrae
(3) Nails (4) Ear ossicles

6. The epithelial tissue present on the inner surface of bronchioles and fallopian tubes is:-
(1) Squamous (2) Cuboidal
(3) Glandular (4) Ciliated

AIPMT-Pre 2010

7. The kind of epithelium which forms the inner walls of blood vessels is :
(1) squamous epithelium
(2) cuboidal epithelium
(3) columnar epithelium
(4) ciliated columnar epithelium

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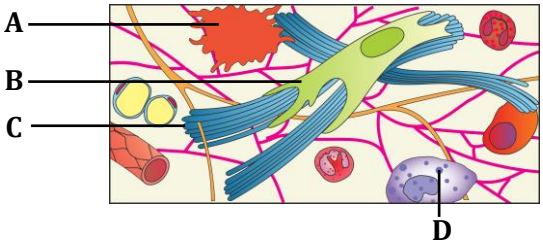
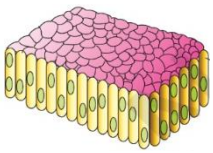
AIPMT-Mains 2012

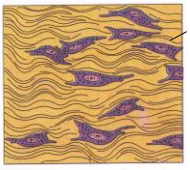
8. Given below is the diagrammatic sketch of a certain type of connective tissue. Identify the parts labelled A, B, C and D, and select the right option about them.



Options :
(1) A–Macrophage, B–Collagen fibres, C–Fibroblast, D–Mast cell
(2) A–Mast cell, B–Collagen fibres, C–Fibroblast, D–Macrophage
(3) A–Macrophage, B–Fibroblast, C–Collagen fibres, D–Mast cell
(4) A–Mast cell, B–Macrophage, C–Fibroblast, D–Collagen fibres

9. The four sketches (A, B, C and D) given below, represent four different types of animal tissues. Which one of these is correctly identified in the options given, along with its correct location and function?

(A)  (B)

(C)  (D)

		Tissue	Location	Function
(1)	(D)	Smooth muscle tissue	Heart	Heart contraction
(2)	(A)	Columnar epithelium	Nephron	Secretion and absorption
(3)	(B)	Glandular epithelium	Intestine	Secretion
(4)	(C)	Collagen fibres	cartilage	Attach skeletal muscles to bones

TG: @Chalnaayaaar

10. The supportive skeletal structures in the human external ears and in the nose tip are examples of :-
(1) bone (2) cartilage
(3) ligament (4) areolar tissue

AIPMT 2014

11. Choose the correctly matched pair :-
(1) Tendon–Specialized connective tissue
(2) Adipose tissue – Dense connective tissue
(3) Areolar tissue – Loose connective tissue
(4) Cartilage–Loose connective tissue

Re-AIPMT 2015

12. The function of the gap junction is to :
(1) stop substance from leaking across a tissue
(2) performing cementing to keep neighbouring cells together
(3) Facilitate communication between adjoining cells by connecting the cytoplasm for rapid transfer of ions, small molecules and some large molecules
(4) separate two cells from each other.

NEET-I 2016

13. Which type of tissue correctly matches with its location ?

	Tissue	Location
(1)	Smooth muscle	Wall of intestine
(2)	Areolar tissue	Tendons
(3)	Transitional epithelium	Tip nose
(4)	Cuboidal epithelium	Lining of stomach

14. Connective tissues are derived from embryonic
(1) Ectoderm (2) Endoderm
(3) Endo mesoderm (4) Mesoderm

TG: @Chalnaayaaar

NEET-UG 2019

15. The ciliated epithelial cells are required to move particles or mucus in a specific direction. In humans, these cells are mainly present in :
(1) Bile duct and Bronchioles
(2) Fallopian tubes and Pancreatic duct
(3) Eustachian tube and Salivary duct
(4) Bronchioles and Fallopian tubes

NEET-UG 2019 (Odisha)

16. Match the following cell structure with its characteristic feature:

(a)	Tight junctions	(i)	Cement neighbouring cells together to form sheet
(b)	Adhering Junctions	(ii)	Transmit information through chemical to another cells
(c)	Gap junctions	(iii)	Establish a barrier to prevent leakage of fluid across epithelial cells
(d)	Synaptic junctions	(iv)	Cytoplasmic channels to facilitate communication between adjacent cells

Select correct option from the following
(1) (a)-(ii), (b)-(iv), (c)-(i), d-(iii)
(2) (a)-(iv), (b)-(ii), (c)-(i), d-(iii)
(3) (a)-(iii), (b)-(i), (c)-(iv), d-(ii)
(4) (a)-(iv), (b)-(iii), (c)-(i), d-(ii)

NEET-UG 2020 (COVID-19)

17. Select the incorrectly matched pair from following:
(1) Chondrocytes - Smooth muscle cells
(2) Neurons - Nerve cells
(3) Fibroblast - Areolar tissue
(4) Osteocytes - Bone cells

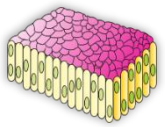
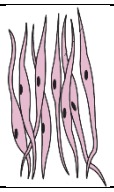
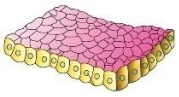
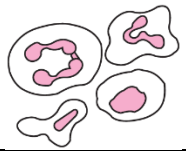
NEET-UG 2020

18. Goblet cells of alimentary canal are modified from :
(1) Compound epithelial cells
(2) Squamous epithelial cells
(3) Columnar epithelial cells
(4) Chondrocytes

19. Cuboidal epithelium with brush border of microvilli is found in :
(1) eustachian tube
(2) lining of intestine
(3) ducts of salivary glands
(4) proximal convoluted tubule of nephron

NEET-UG 2021 (Paper-2)

20. Match the following and choose the correct combination.

Column-I (Figure)		Column-II (Character)	
a.		i.	Component of connective tissue
b.		ii.	Found in duct of glands
c.		iii.	Secretion and absorption
d.		iv.	Functioning cannot be directly controlled

(1) a–ii, b–iii, c–i, d–iv
(2) a–iii, b–iv, c–ii, d–i
(3) a–iv, b–iii, c–ii, d–i
(4) a–i, b–ii, c–iv, d–iii

NEET-UG 2022

21. Which of the following is present between the adjacent bones of the vertebral column?
(1) Cartilage
(2) Areolar tissue
(3) Smooth muscle
(4) Intercalated discs

22. Which of the following is **not** a connective tissue?
(1) Adipose tissue (2) Cartilage
(3) Neuroglia (4) Blood

Re-NEET-UG 2022

23. Which of the following types of epithelium is present in the bronchioles and Fallopian tubes?
(1) Simple squamous epithelium
(2) Simple columnar epithelium
(3) Ciliated epithelium
(4) Stratified squamous epithelium

Exercise - II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	3	2	4	1	4	1	3	3	2	3	3	1	4	4
Question	16	17	18	19	20	21	22	23							
Answer	3	1	3	4	2	1	3	3							

TG: @Chalnaayaaar

TG: @Chalnaayaaar

Exercise - III Master Your Understanding

EXERCISE-III (A) (NCERT Based QUESTIONS)

1. How many of the following junctions are found in epithelium tissue?
Tight junction, Gap and Adhering junction.
(1) Four (2) Three
(3) Two (4) One

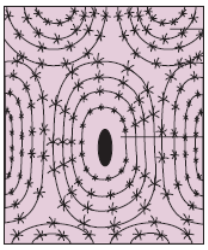
2. Read the following (A-D) statements
A. It is made of more than one layer (multi-layered) of cells.
B. It has a limited role in secretion and absorption.
C. Their main function is to provide protection against chemical and mechanical stress
D. It covers the dry surface of the skin and the moist surface of buccal cavity.
How many of the above statements are correct for compound epithelium?
(1) Four (2) Three (3) Two (4) One

3. How many of the following substances are secreted by exocrine glands?
mucus, thyroxine, saliva, earwax, insulin, oil, milk, digestive enzymes,melatonin and adrenalin:-
(1) Four (2) Five (3) Six (4) Seven

4. Which connective tissues are present beneath the skin?
A. Areolar tissue
B. Adipose tissue
C. Dense irregular connective tissue
(1) Only B (2) Only A
(3) Only A and B (4) All A, B and C

5. Read the following (A-D) statements :-
A. Connective tissue are most abundant and widely distributed in the body of complex animals
B. They are named connective tissues because of their special function of linking and supporting other tissues/organs of the body
C. They range from soft connective tissues to specialised types, which include cartilage, bone, adipose and blood
D. The cells of connective tissue secrete modified polysaccharides, which accumulate between cells and fibres and act as matrix
How many of the following statements are correct?
(1) Four (2) Three
(3) Two (4) One

6. Identify the given below tissue with its type and select the right option for the two together



Option :

Tissue	Type
(1) Cartilage	Specialised connective tissue
(2) Tendon	Dense irregular connective tissue
(3) Ligament	Dense regular connective tissue
(4) Bone	Specialised connective tissue

7. Which of the following is incorrect statement for the simple columnar epithelium?
(1) It is composed of a single layer of tall and slender cells
(2) Their nuclei are located at the base
(3) Free surface may have microvilli
(4) They are found in the walls of blood vessels and air sac of lungs

8. Connective tissues includes :-
(a) Cartilage (b) Bone
(c) Adipose tissue (d) Blood
(1) a, b, and d (2) a, b and c
(3) b and d (4) All a, b, c and d

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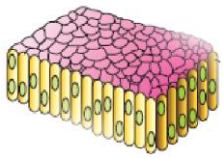
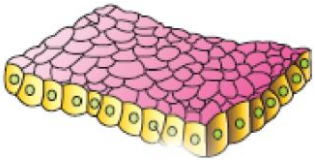
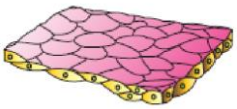
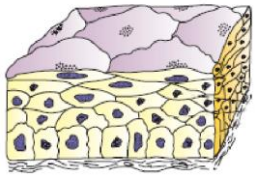
9. The four sketches (A, B, C and D) given below represent four different types of animal tissues. Which one of these is correctly identified in the option given along with its correct location and function?


(A)


(B)


C


D

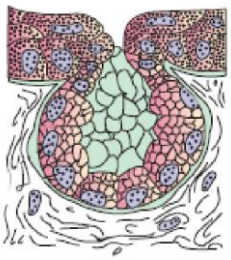
		Tissue	Location	Function
1.	B	Simple squamous epithelium	Fallopian tube	Transport of gamete
2.	C	Simple cuboidal epithelium	Wall of blood vessels and air sac of lungs	Diffusion boundary
3.	D	Compound epithelium	Skin	Protection
4.	A	Simple columnar epithelium	Tubular part of nephron	Secretion

10. Read the following (A - D) Statements :-
(A) Tight junctions help to stop substances from leaking across a tissue
(B) Adhering junctions perform cementing to keep neighbouring cells together.
(C) The simple epithelium consists of two or more cell layers and has protective function.
(D) The columnar epithelium is made of a single layer of flattened cells with irregular boundaries
How many of the above statements are correct?
(1) Four (2) Three
(3) Two (4) One

TG: @Chalnaayaaar

11. Identify the glands (A) and (B) shown below and select the right option for location and function:-

A


B

		Gland	Location	Function
1.	A	Unicellular Gland	Alveoli	Secrete Saliva
2.	B	Multicellular gland	Oesophagus	Secrete enzyme
3.	A	Multicellular gland	Alimentary Canal	Secrete Mucous
4.	B	Multicellular gland	Buccal Cavity	Secrete Saliva

12. Which of the following is correct match of epithelial tissue ?

(1)	Squamous epithelium	Bronchioles and fallopian tube
(2)	Columnar eqithelium	Ducts of glands and tubular part of nephron
(3)	Cuboidial epithelium	Walls of blood vessels and air sacs of lungs
(4)	Compound epithelium	Buccal cavity and pharynx

13. Read the following (A - D) statements :-
(A) Areolar tissue present beneath the skin
(B) Adipose tissue is a type of dense connective tissue
(C) Tendons attach one bone to another
(D) Ligaments attach skeletal muscles to bones
How many of the above statements are incorrect?
(1) Four (2) Three (3) Two (4) One

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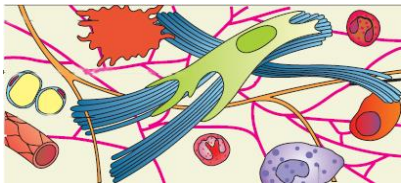
14. In multicellular animals a group of similar cells along with intercellular substances perform a specific function such an organisation is called :-
(1) Tissue (2) Organ
(3) Body (4) Organ system

15. Identify the figure of animal tissue given below, along with it's correct location :-



Tissue	Location
(1) Dense regular Connective tissue	Heart
(2) Dense irregular Connective tissue	At bone joints
(3) Adipose tissue	Beneath skin
(4) Areolar connective tissue	Beneath skin

EXERCISE-III (B) (ANALYTICAL QUESTIONS)

16. Ligament connects :
(1) Bone to bone (2) Bone to muscle
(3) Muscle to muscle (4) Both (2) and (3)

17. Which of the following pair is example of dense regular connective tissue ?
(1) Ligament and tendon
(2) Perichondrium and pericardium
(3) Ligament and pericardium
(4) Perichondrium and tendon

18. Match the following columns and choose the correct answer from the options given below

	Column-A		Column-B
(a)	Epithelial tissue	(i)	Helps in contraction and relaxation
(b)	Connective tissue	(ii)	Form the lining and covering of body organs
(c)	Muscular tissue	(iii)	Conduction and transmission
(d)	Nervous tissue	(iv)	Connect the various parts of the body

(1) (a)- (i) , (b) – (ii) , (c) – (iii) , (d) – (iv)
(2) (a)- (ii) , (b) – (iv) , (c) – (i) , (d) – (iii)
(3) (a)- (ii) , (b) – (iii) , (c) – (i) , (d) – (iv)
(4) (a)- (iv) , (b) – (ii) , (c) – (iii) , (d) – (i)

19. Haversian canal is situated in
(1) Glandular connective tissue
(2) Skeletal connective tissue
(3) Fibrous connective tissue
(4) Nervous tissue

20. Which of the following statement is incorrect about the epithelial tissue?
(1) Simple epithelium composed of single layer of cells
(2) Functions of simple epithelium is to form lining for body cavities, ducts and tubes
(3) Compound epithelium is also called stretchable epithelium
(4) Compound epithelium has protective functions as it does in our skin

21. Collagen fibres are secreted by :
(1) Mast cells
(2) Macrophage
(3) Histiocytes
(4) Fibroblasts

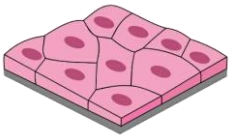
22. Tendons and ligaments are specialized types of
(1) Nervous tissue
(2) Epithelial tissue
(3) Muscular tissue
(4) Fibrous connective tissue

23. Choose the statements which are related with simple and stratified epithelium?
(a) Composed of single layer of cells
(b) Consists of two or more layers of cells
(c) Functions as lining for body cavities, ducts and tubes.
(d) It has protective function as it does in our skin

	a	b	c	d
(1)	Simple	Simple	Stratified	Stratified
(2)	Simple	Stratified	Simple	Stratified
(3)	Simple	Stratified	Stratified	Simple
(4)	Stratified	Simple	Simple	Stratified

TG: @Chalnaayaaar

24. Which of the following statement is incorrect about the diagram given below ?



(1) This epithelium has free surface
(2) Made up of single layer of flat cells
(3) Also called tessellated epithelium
(4) This epithelium helps in absorption and secretion

25. Ciliated epithelium is present in
(1) Trachea (2) Ureter
(3) Intestine (4) Stomach

26. Given below are two statements. One is labelled as Assertion (A) and the other is labelled as Reason (R).
Assertion(A) : Compound epithelium has a limited role in secretion and absorption.
Reason (R) : Compound epithelium is multilayered and it's main function is to provide protection against chemical and mechanical stress.
In the light of the above statements, choose the correct answer from the option given below.
(a) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
(b) (A) is correct but (R) is not correct.
(c) (A) is not correct but (R) is correct.
(d) Both (A) and (R) are correct and (R) is the correct explanation of (A)

27. Identify the correct set of statements.
(a) Loose connective tissue has cells and fibres compactly arranged in a semi-fluid ground substance.
(b) Tendons attach skeletal muscles to bones.
(c) Chondrocytes are enclosed in small cavities within the matrix.
(d) All cells in epithelium are held together with the little intercellular material.
Choose the correct answer from the options given below.
(1) (a) and (b) only
(2) (a) and (d) only
(3) (a), (b) and (c) only
(4) (b), (c) and (d) only

TG: @Chalnaayaaar

28. Which of the following part is not lined by modification of simple columnar epithelium?
(1) Small intestine
(2) Blood vessels of small intestine and alveoli
(3) Liver and bile duct
(4) Fallopian tubes

29. Choose the statements which are related with simple and stratified epithelium?
(a) Composed of single layer of cells
(b) Consists of two or more layers of cells
(c) Functions as lining for body cavities, ducts and tubes.
(d) It has protective function as it does in our skin

	a	b	c	d
(1)	Simple	Simple	Stratified	Stratified
(2)	Simple	Stratified	Simple	Stratified
(3)	Simple	Stratified	Stratified	Simple
(4)	Stratified	Simple	Simple	Stratified

30. Tendon is mainly made up of
(1) Reticulin (2) Elastin
(3) Myosin (4) Collagen

31. Which of the following is lined by compound epithelium?
A - Moist surface of buccal cavity
B - Alveoli of lungs
C - Dry surface of skin
D - Inner lining of ducts of salivary glands
E - Endothelium
(1) A, C and D (2) A, B and D
(3) A, D and E (4) A, B, C and D

32. Find the mismatch :-
(1) Tendon — Dense regular white fibrous connective tissue.
(2) Ligament — Dense regular yellow fibrous connective tissue.
(3) Wall of alveoli of lungs — Dense irregular yellow fibrous connective tissue.
(4) Periosteum — Dense regular white fibrous connective tissue

33. The main function of ligament is :
(1) Joining of two bones
(2) Joining of muscles
(3) Joining of muscle to bone
(4) Joining of muscle to nerves

TG: @Chalnaayaaar

34. Identify the diagram given below and its examples in our body?

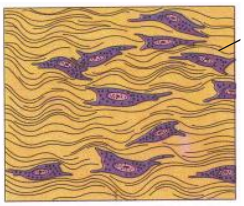


	Diagram	Examples
(1)	Dense regular CT	Ligament
(2)	Dense irregular CT	Ligament, Tendon
(3)	Dense regular CT	Ligament, Tendon
(4)	Dense irregular CT	Tendon, Perichondrium

35. How many statements are incorrect for bones?

(a) Bones have hard and pliable ground substance

(b) Matrix is rich in collagen fibres

(c) Bone is a specialized connective tissue

(d) They serve weight-bearing function

(e) Osteoblasts are present in lacunae

(1) three (2) four

(3) one (4) two

36. Identify correct set of statements.

(a) In nearly all animal tissues specialised junction provide both structural and functional links between its individual cells.

(b) Gap junctions help to stop substances from leaking across a tissue.

(c) Tight junctions perform connecting the cytoplasm to keep neighbouring cells together.

(d) Epithelium tissue are most abundant and widely distributed in the body of complex animals.

Choose the correct answer from the options given below.

(1) (a) and (d) only

(2) (b) and (c) only

(3) (a) only

(4) (a), (c) and (d) only

37. Mucus cells (Goblet cells) :-

(1) Unicellular gland

(2) Multicellular glands

(3) Endocrine glands

(4) Parietal cells of gastric glands

38. 3. Given below are two statements –

Statement I : Bones have a solid and pliable ground substances rich in calcium salts and collagen fibre.

Statement II : Most of cartilages in vertebrate embryos are replaced by bone in adults.

In the light of the above statements, choose the correct answer from the option given below.

(1) Both statement–I and statement–II are incorrect.

(2) Statement–I is correct but statement–II is incorrect.

(3) Statement–I is incorrect but statement – II is correct.

(4) Both statement–I and statement–II are correct.

39. Epithelial tissues are arise from :

(1) Ectoderm (2) Endoderm

(3) Mesoderm (4) All the aboves

40. Given below are two statements –

Statement I : Neuroglia make up more than one half the volume of neural tissue in our body.

Statement II : The bone marrow in all bones is the site of production of blood cells.

In the light of the above statements, choose the correct answer from the option given below.

(1) Both statement – I and statement–II are incorrect.

(2) Statement – I is correct but statement-II is incorrect.

(3) Statement–I is incorrect but statement–II is correct.

(4) Both statement–I and statement–II are correct.

TG: @Chalnaayaaar

41. Given below are two statements. One is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion(A) : Some of the columnar or cuboidal cells get specialised for secretion.

Reason (R) : Columnar epithelium is commonly found in duct of glands and tubular part of nephron in kidneys.

In the light of the above statements, choose the correct answer from the option given below.

(1) Both (A) and (R) are correct but (R) is not the correct explanation of (A).

(2) (A) is correct but (R) is not correct.

(3) (A) is not correct but (R) is correct.

(4) Both (A) and (R) are correct and (R) is the correct explanation of (A)

Exercise - III ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	1	3	3	1	4	4	4	3	3	4	4	2	1	4
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	1	1	2	2	3	4	4	2	4	1	4	4	2	2	4
Question	31	32	33	34	35	36	37	38	39	40	41				
Answer	1	4	1	3	4	3	1	3	4	2	2				

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Exercise - I (Conceptual Questions) Build Up Your Understanding

INTRODUCTION AND MORPHOLOGY

1. Zoological name of cockroach is :
(1) *Glossina palpalis*
(2) *Periplaneta americana*
(3) *Musca nebulo*
(4) *Apis indica*

2. Diagonistic feature of insects is :
(1) Segmented body
(2) Chitin in body wall
(3) Three pair of legs
(4) One pair compound eyes

3. Which are the two common indian cockroaches?
(1) *Periplaneta americana* and *Blatta indica*
(2) *Periplaneta indica* and *Blatta orientalis*
(3) *Periplaneta orientalis* and *Blatta americana*
(4) *Periplaneta americana* and *Blatta orientalis*

4. Characteristic of group insecta is :
(1) Joined appendages
(2) 3 pair of jointed legs
(3) Chitinous exoskeleton
(4) Compound eyes

5. Cockroaches are brown or black bodied animals that are included in class _____ of phylum _____.
(1) reptilia; annelida
(2) insecta; arthropoda
(3) insecta; annelida
(4) reptilia; arthropoda

6. Cockroaches are serious pests and vectors of several diseases like :-
(1) malaria and cholera
(2) cholera and dysentery
(3) giardiasis and filariasis
(4) malaria and cancer

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7. The plate situated between the eyes and passing below that on the head of cockroach is called :
(1) Vertex (2) Frons
(3) Epicranium (4) Gena

8. The dorsal plate of skeleton found on the abdomen of cockroach is called :
(1) Pleuron (2) Sternum
(3) Tergum (4) Vertex

9. Outer border of tergum bends downwards in cockroach and attaches with :
(1) Muscles (2) Sternum
(3) Pleura (4) Fat body cells

10. Mandibles of cockroach are :
(1) Short with grinding teeth
(2) Long and pointed
(3) short without teeth
(4) long and coiled

11. Head of cockroach according to its position is known as :
(1) Hypopharynx (2) Hypocyrebral
(3) Hypognathus (4) Supragnathus

12. Number of visible sternum present at the abdomen of female cockroach is :
(1) 6 (2) 7 (3) 8 (4) 9

13. Tongue like structure in *Periplaneta* is :
(1) Maxilla (2) Hypopharynx
(3) Labium (4) Labrum

14. Which structure is known as lower lip of cockroach ?
(1) Labrum (2) Labium
(3) Mantum (4) Submentum

15. Wings of cockroach are mainly helpful in :
(1) Egg laying (2) Preying
(3) Finding the mate (4) Protection

16. *Periplaneta americana* differs from *Blata orientalis* in :
(1) Well developed wings
(2) Wings absent
(3) Only first pair wings developed
(4) Second pair wing developed

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17. Number of segments in cockroach leg :
(1) 3 (2) 5 (3) 6 (4) 9

18. Undeveloped wings are found in :
(1) Housefly (2) Cockroach
(3) Mosquito (4) Blatta

19. Pseudopodia of *Amoeba* are similar to :
(1) Legs of cockroach
(2) Teeth in rabbit
(3) Spicules of *Leucosolenia*
(4) Suckers of *Taenia*

20. Plantulae are found in cockroach upon :
(1) Pretarsus (2) Femur
(3) Trochanter (4) Coxa

21. Most swollen segment in leg cockroach is :
(1) Tarsus (2) Coxa
(3) Femur (4) Trochanter

22. In cockroach arolium is helpful in :
(1) In digestion (2) Respiration
(3) Locomotion (4) Reproduction

23. Main character for the distinction between male and female cockroach :
(1) Antennae (2) Mandibles
(3) Anal cerci (4) Anal style

24. Anal styles are found in :
(1) Housefly
(2) Female cockroach
(3) Male cockroach
(4) Both male & female cockroach

25. Body segments are definite and well marked in:
(1) *Hydra* (2) *Taenia*
(3) *Ascaris* (4) Cockroach

26. In cockroach the audioreceptors are situated on :
(1) On legs (2) Antenna
(3) Sensory receptor (4) Anal cerci

27. The gynovalvular plates in female cockroach are modification of :
(1) 7th tergum (2) 7th sternum
(3) 8th Tergum (4) 8 sternum

28. Stink glands are found in :
(1) Only in males (2) Only in female
(3) In both (4) None

29. Exoskeleton of cockroach is made up of :
(1) Cartilage (2) Cuticle
(3) Chitin (4) Amino acids

30. Cockroach and other insects have exoskeleton made up of :
(1) Keratin (2) Spongin
(3) Chitin (4) Cuticle

31. In which part of cockroach is present completely developed endoskeleton and exoskeleton both ?
(1) In head region
(2) Thoracic region
(3) Abdominal region
(4) In head & thoracic regions

BODY CAVITY, BODY WALL, DIGESTION, RESPIRATION, CIRCULATION AND EXCRETION

32. The body cavity of cockroach is called :
(1) Pseudocoel (2) Coelom
(3) Hydrocoel (4) Haemocoel

33. Grinded food enters into the midgut through:-
(1) Sieve (2) Stomodial valve
(3) Gizzard (4) Crop

34. Cockroach can digest ____.
(1) Protein (2) Carbohydrate
(3) Fat (4) All of them

35. Hepatic caecae in cockroach are derived from:
(1) Crop (2) Gizzard
(3) Midgut (4) Proctodaeum

36. Saliva of cockroach contains enzyme :
(1) Lipase (2) Amylase
(3) Pepsin (4) Trypsin

37. Salivary glands of cockroach open on :
(1) Maxilla (2) Hypopharynx
(3) Labium (4) Labrum

38. Mouth part of cockroach are suited for :
(1) Piercing (2) Absorbing
(3) Cutting & chewing (4) Drinking

39. Cockroach is :
(1) Omnivorous
(2) Herbivorous
(3) Carnivorous
(4) Sanguivorous

40. In cockroach food is crushed in which part :
(1) Crop (2) Gizzard
(3) Mesenteron (4) Oesophagus

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41. In which part of alimentary canal of cockroach is invagination of cuticle found ?
(1) Anterior part
(2) In midpart
(3) In posterior part
(4) Both in antherior and posterior part

42. The inner layer of gizzard of cockroach is covered by :
(1) By cuticle
(2) By mucous membrane
(3) By endoepithelium
(4) By peritrophic membrane

43. Maximum digestion takes place in which part of cockroach ?
(1) In crop
(2) In Gizzard
(3) In mesenteron
(4) In oesophagous

44. Oxygen is carried to the tissues of cockroach by which organ :
(1) Skin
(2) Trachea
(3) Plasma
(4) Respiratory pigment

45. Alary muscles in cockroach are associated or connected with :
(1) Trachea (2) Heart
(3) Legs (4) Alimentary canal

46. Number of pairs of spiracles in cockroach are:
(1) 4 (2) 6
(3) 8 (4) 10

47. In cockroach O_2 is carried to tissue by :
(1) Haemoglobin and haemocyanin
(2) Blood plasma
(3) Tracheal tubes
(4) Diffusion through integument

48. Blood of cockroach does not contain haemoglobin because :
(1) It respires through atmosphere
(2) Respires through book lungs
(3) It does not respire
(4) It has some other means to carry oxygen direct into the tissues

49. Give the name of blood vessel, which arises from first chamber of heart in cockroach :
(1) Nephrocyte
(2) Fenestrae
(3) Ostia
(4) Anterior aorta

50. Number of chambers in the heart of cockroach :
(1) 5 (2) 9 (3) 13 (4) 16

51. Blood circulation in insects :
(1) Flows in arteries and veins
(2) With red blood corpuscles
(3) Open type
(4) Absent

52. Heart of cockroach is :
(1) Four chamberd
(2) Vertral to gut
(3) Longitudinal & beaded
(4) Three chambered

53. The colour of haemolyph of cockroach is :
(1) Yellow (2) Red
(3) Green (4) Colourless

54. Physiologically the heart of cockroach is :
(1) Neurogenic
(2) myogenic
(3) Epigenic
(4) Agenic

55. Main excretory product of cockroach is :
(1) Urea
(2) Ammonia
(3) Uric acid
(4) Amino acid

56. Function of Malpighian tubules of cockroach :
(1) Digestion
(2) Respiration
(3) Excretion
(4) Reproduction

57. Exeretory organs of cockroach are :
(1) Trachea
(2) Kidney
(3) Nephridia
(4) Malpighian tubules

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NERVOUS SYSTEM, COMPOUND EYE, REPRODUCTION AND DEVELOPEMENT

58. The nerve cord of cockroach is :
(1) Double, ventral and solid
(2) Double dorsal and hollow
(3) Single, dorsal and solid
(4) Single, ventral and hollow

59. In cockroach which is helpful in sexual attraction?
(1) Hormone ecdysone
(2) Pheromone
(3) Juvenile hormone
(4) Anal cerci

60. Ommatidia are found in :
(1) Eyes of birds (2) Eye of frog
(3) Eye of insects (4) Eye of rabbit

61. Structural units found in the compound eye of cockroach are called :
(1) Rhabdom (2) Cone cells
(3) Ommatidia (4) Simple eye

62. What type of vision is found in cockroach ?
(1) Mosaic (2) Super position
(3) Binocular (4) None of them

63. Ommatidia are units in the eyes of :
(1) Amphibians (2) Mammals
(3) Insects (4) Fishes

64. Apposition image in eye of insects is formed in :
(1) Dim light (2) Bright Light
(3) ocelli (4) None

65. Eggs which have yolk in the centre surrounded by cytoplasm are called :
(1) Centrolecithal (2) Homolecithal
(3) Microlecithal (4) Alecithal

66. Ootheca is formed in cockroach by :
(1) Phallic Gland
(2) Conglobate gland
(3) Utricular gland
(4) Collaterial Gland

67. Ootheca of Cockroach has fertilized eggs, this numbers is :
(1) 6 (2) 8 (3) 16 (4) 24

68. From egg laying to the development of adult cockroach. How many moluting occur?
(1) 13 times (2) 9 times
(3) 6 times (4) 3-4 times

69. The type of egg in cockroach is called :
(1) Microlecithal (2) Centrolecithal
(3) Isolecithal (4) Telolecithal

70. Sexual dimorphism is distinct in :
(1) *Hydra* (2) Earthworm
(3) Sponge (4) Cockroach

71. Conglobate gland is found in the reproductive organs of :
(1) Earth worm
(2) Housefly
(3) Male cockroach
(4) Female cockroach

72. Number of moultings in cockroach after hatching and development of complete animal are :
(1) Less than 7 (2) Upto 8
(3) Upto 9 (4) more than 10

73. How many ovarioles are found in each ovary of cockroach ?
(1) 3 (2) 6 (3) 8 (4) 16

74. Collaterial glands of cockroach help in :
(1) Fertilization
(2) Formation of ootheca
(3) Copulation
(4) Formation of oothecal chamber

75. In the life history of cockroach (*Periplaneta*) there is:
(1) No Metamorphosis
(2) Gradual metamorphosis
(3) Complete metamorphosis
(4) Anamorphosis

76. Juvenile of cockroach is known as :
(1) Tadepole (2) Amocyte
(3) Nymph (4) Naid

77. Life time of cockroach in general is :
(1) Approximately 1 year
(2) 3 to 3.5 years approx
(3) 5 to 7.5 years approx
(4) 10 years approx

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78. In which of the following moulting is not found ?
(1) *Hydra* (2) Mosquito
(3) Housefly (4) Cockroach

79. Life history of cockroach represents :
(1) Ametaboly (2) Holometaboly
(3) Paurometaboly (4) Hypermetaboly

80. Common feature between cockroach and earthworm is :
(1) Hermaphroditism
(2) Moulting of cuticle
(3) Excretion by nephridia
(4) Ventral nerve cord

81. Which has/have chitinous exo-skeleton ?
(1) Cockroach (2) Mosquito
(3) Butterfly (4) All of the above

82. Cockroach is :
(1) Nocturnal and omnivorous
(2) Diurinal and omnivorous
(3) Nocturnal and carnivorous
(4) None

EXERCISE-I (Conceptual Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	3	4	2	2	2	2	3	3	1	3	2	2	2	4
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	1	2	4	1	1	2	3	4	3	4	4	2	3	3	3
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	1	4	2	4	3	2	2	3	1	2	4	1	1	2	2
Question	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Answer	4	3	4	4	3	3	3	4	1	3	3	4	1	2	3
Question	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75
Answer	3	1	3	2	1	4	3	1	2	4	3	4	3	2	2
Question	76	77	78	79	80	81	82								
Answer	3	2	1	3	4	4	1								

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Exercise - II (Previous Year Questions) AIPMT/NEET

AIPMT - 2009

1. Uric acid is the chief nitrogenous component of the excretory products of:-
(1) Frog (2) Man
(3) Earthworm (4) Cockroach

AIPMT - 2011

2. Which of the following correctly state as it happens in the common cockroach?
(1) Malpighian tubules are excretory organs projecting out from the colon.
(2) Oxygen is transported by haemoglobin in blood.
(3) Nitrogenous excretory product is urea.
(4) The food is grinded by mandibles and gizzard

AIPMT 2015

3. The terga, sterna and pleura of cockroach body are joined by :-
(1) Muscular tissue
(2) Arthrodial membrane
(3) Cartilage
(4) Cementing glue

Re-AIPMT 2015

4. The body cells in cockroach discharge their nitrogenous waste in the haemolymph mainly in the form of :-
(1) Calcium carbonate
(2) Ammonia
(3) Potassium urate
(4) Urea

NEET - 2017

5. Which of the following structures does not open into the genital chamber of female cockroaches?
(1) A single median oviduct
(2) Spermatheca
(3) A pair of anal cerci
(4) A pair of collateral glands

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6. Select the incorrect option with respect to features present in three animals :-

	Characters	Cockroach	Earthworm	Frog
(1)	Blood vascular body	Open	Closed	Closed
(2)	Body surface	Dry	Moist	Moist
(3)	Eyes	Compound	Absent	Simple
(4)	Development	Direct	Indirect	Indirect

NEET (UG) - 2018

7. Which of the following features is used to identify a male cockroach from a female cockroach?
(1) Presence of a boat shaped sternum on the 9^{th} abdominal segment
(2) Presence of caudal styles or anal styles
(3) Forewings with darker tegmina
(4) Presence of anal cerci

NEET (UG) - 2019

8. Select the correct sequence of organs in the alimentary canal of cockroach starting from mouth :-
(1) Pharynx → Oesophagus → Crop → Gizzard → Ileum → Colon → Rectum
(2) Pharynx → Oesophagus → Gizzard → Crop → Ileum → Colon → Rectum
(3) Pharynx → Oesophagus → Gizzard → Ileum → Crop → Colon → Rectum
(4) Pharynx → Oesophagus → Ileum → Crop → Gizzard → Colon → Rectum

NEET (UG) - 2020

9. If the head of cockroach is removed, it may live for few days because: -
(1) the supra-oesophageal ganglia of the cockroach are situated in ventral part of abdomen.
(2) the cockroach does not have nervous system.

(3) the head holds a small proportion of a nervous system while the rest is situated along the ventral part of its body.
(4) the head holds a 1/3rd of a nervous system while the rest is situated along the dorsal part of its body.

NEET (UG) (COVID-19) - 2020

10. In cockroach, identify the parts of the foregut in correct sequence: -
(1) Mouth → Oesophagus → Pharynx → Crop → Gizzard
(2) Mouth → Crop → Pharynx → Oesophagus → Gizzard
(3) Mouth → Gizzard → Crop → Pharynx → Oesophagus
(4) Mouth → Pharynx → Oesophagus → Crop → Gizzard

11. Match the following columns with reference to cockroach and select the correct option :

Column - I	Column - II
(a) Grinding of the food particles	(i) Hepatic caecal
(b) Secrete gastric juice	(ii) 10th segment
(c) 10 pairs	(iii) Proventriculus
(d) Anal cerci	(iv) Spiracles
	(v) Alary muscles

(1) (a)–(iii), (b)–(i), (c)–(iv), (d)–(ii)
(2) (a)–(iv), (b)–(iii), (c)–(v), (d)–(ii)
(3) (a)–(i), (b)–(iv), (c)–(iii), (d)–(ii)
(4) (a)–(ii), (b)–(iii), (c)–(i), (d)–(iv)

NEET (UG) - 2021

12. Which of the following characteristics is incorrect with respect to cockroach?
(1) A ring of gastric caeca is present at the junction of midgut and hind gut.
(2) Hypopharynx lies within the cavity enclosed by the mouth parts.
(3) In females, 7th - 9th sterna together form a genital pouch.
(4) 10th abdominal segment in both sexes, bears a pair of anal cerci.

NEET (UG) - 2022

13. Tegmina in cockroach, arises from:
(1) Mesothorax
(2) Metathorax
(3) Prothorax and Mesothorax
(4) Prothorax

Re-NEET (UG) - 2022

14. Match List–I with List-II regarding the organs of Cockroach:

List–I	List–II
(a) Crop	(i) grinding the food particles
(b) Proventriculus	(ii) secretion of digestive juice
(c) Hepatic caecae	(iii) removal of nitrogenous waste
(d) Malpighian tubules	(iv) storage of food

Choose the correct answer from the options given below:
(1) (a) – (iv), (b) – (i), (c) – (ii), (d) – (iii)
(2) (a) – (iii), (b) – (ii), (c) – (i), (d) – (iv)
(3) (a) – (ii), (b) – (iv), (c) – (i), (d) – (iii)
(4) (a) – (i), (b) – (iv), (c) – (iii), (d) – (ii)

EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Answer	4	4	2	3	3	4	2	1	4	4	1	1	1	1	

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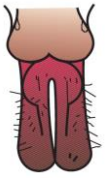
Exercise - III Master Your Understanding

EXERCISE-III (A) NCERT BASED QUESTIONS

1. Which of the following incorrect statement about cockroach
(1) Nymph grows by moulting about 13 times to reach the adult form
(2) Next to last nymphal stage has wing pad
(3) Many species of cockroaches are wild and are no economic importance
(4) Have pair of compound eyes and two pair of antenna

2. How many filamentous malphigian tubules are in cockroach?
(1) 100 – 150 (2) 50 – 100
(3) 150 – 200 (4) 200 – 250

3. Identify the A, B, C and D in the given diagram and choose the correct option :

(A)  (B)

(C) (D)

	A	B	C	D
1	Hypopharynx	Mandible	Labrum	Maxilla
2	Labrum	Maxilla	Mandible	Hypopharynx
3	Hypopharynx	Labrum	Maxilla	Mandible
4	Mandible	Hypopharynx	Labrum	Maxilla

4. Choose the correct statement regarding cockroach
(1) Sperms are store in the ootheca
(2) fertilization occurs in seminal vessicles
(3) Anal style found in female cockroach
(4) Pair of spermatheca present in 6th segment

5. A pair of testis in cockroach lie in -
(1) 2 – 6 abdominal segment
(2) 4 – 7 abdominal segment
(3) 4 – 6 abdominal segment
(4) 6 – 8 abdominal segment

6. Exo-skeleton plates of cockroach are connected by thin flexible membrane that is known as
(1) Arthrodial membrane
(2) Peritoneal membrane
(3) Pleural membrane
(4) Perichordial membrane

7. Match the column I and II correctly.

	Column-I		Column-II
(A)	Ovary	(i)	10th segment
(B)	Gizzard	(ii)	Excretary organ
(C)	Malpighian tubules	(iii)	Grinding of food
(D)	Anal cerci	(iv)	2-6th abdominal segment

(1) A-i, B-ii, C-iii, D-iv
(2) A-ii, B-iii, C-iv, D-i
(3) A-iv, B-iii, C-ii, D-i
(4) A-iii, B-iv, C-i, D-ii

8. How many oothecae are produced by female cockroach?
(1) 14 – 16 (2) 9 – 10
(3) 12 – 13 (4) 1 – 4

EXERCISE-III(B) (ANALYTICAL QUESTIONS)

9. Antennae in cockroaches have sensory receptors that help in :-
(1) Thinking and reasoning
(2) Monitoring the environment
(3) Fighting and running
(4) Tasting and watching

10. **Assertion (A) :** If the head of cockroach is cut off, it will remain alive for as long as one week.
Reason (R): The head of cockroach hold only a bit of nervous system.

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(1) Both (A) and (R) are true and (R) is the correct explanation of (A)
(2) Both (A) and (B) are true, but (R) is not the correct explanation of A
(3) (A) is true, but (R) is false
(4) (A) is false, but (R) is true

11. Select the incorrect statements about the hind wings of cockroach :-
I. These are broad.
II. They are not used in flying
III. They are also known as mesothoracic wings
IV. They are transparent and membranous
(1) Only I (2) II and III
(3) I and IV (4) I, II, III and IV

12. Which of the following is called brain in cockroach?
(1) Supraoesophageal ganglion
(2) Suboesophageal ganglion
(3) Ventral ganglion
(4) Lateral ganglion

13. Nymph differs from adult cockroach in :–
(1) Absence of wings
(2) Smaller in size
(3) Absence of mature reproductive organs
(4) All of these

14. Male cockroach and female cockroach can be differentiated by :
(1) Ocelli (2) Anal cerci
(3) Anal styles (4) Compound Eye

15. Read the following statements about cockroach :
Statement-I : In male cockroach, a characteristic mushroom shaped gland is present in the 6th-7th abdominal segments. Which functions as an accessory reproductive gland.
Statement-II : Blood from sinuses enter heart through ostia and is pumped anteriorly to sinuses again.
Choose the correct answer from the options given below :
(1) Both Statement-I and II are incorrect.
(2) Statement-I is correct but statement-II is incorrect.
(3) Statement-I is incorrect and Statement-II is correct.
(4) Both Statement-I and Statement-II are correct.

EXERCISE-III ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	4	1	1	4	3	1	3	2	2	1	2	1	4	3	4

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